What is claimed is:

1. A method of recognizing deviations in the shape of the surface of an object from a predetermined shape by detecting measurement values and subsequently processing the measurement values in an artificial neuronal net, characterized by the steps of:

- projecting patterns onto the surface of the object;
- recording images of the surface and the patterns by a matrix camera which generates a sequence of n images;
- shifting the projected pattern by predetermined values;
- defining on the basis of the grey value sequence of individual pixels of the n recorded images at least one number which is characteristic of one of the grey value sequence of a given pixel and of the grey value sequence of the pixel relative to at least one grey value sequence of different pixels;
- recalling the neuronal net subsequent to inputting one of the data of the recorded images and the matrix of the at least one characteristic number of the recorded object derived from the image data;
- utilizing as significant data of the deviations the comparison between one of the image data and the matrix of the characteristic number of the recorded object derived from the image data and the recall data of the neuronal net.

2. The method of claim 1, further including the step of normalizing the brightnesses of the sequence of n recorded images.

3. The method of claim 1, wherein the comparison between one of the image data and the matrix of the characteristic number of the recorded object

derived from the image data and the recall data of the neuronal net further includes the step of forming a difference.

4. The method of claim 1, wherein the projected patterns are striped patterns.

5. The method of claim 4, wherein the projected patterns are patterns of stripes of equal width having a sinusoidal brightness curve vertically of the stripes and wherein the patterns are shifted by an $n^{th}$ part of the period of the stripe.

6. The method of claim 5, wherein a phase value is calculated for each pixel from the corresponding grey values and that a matrix thus obtained is used as an input to the artificial neuronal net.

7. The method of claim 5, wherein for each pixel recorded by the matrix camera the similarity is determined between the grey values of a selected pixel and the grey values of a pixel located at a predetermined distance from the selected pixel and that a matrix thus obtained is used as an input data to the artificial neuronal net.

8. The method of claim 7, wherein the pixel located at a predetermined distance from the selected pixel is a pixel neighboring the selected pixel.

9. The method of claim 7, wherein a cross-correlation coefficient is used as a value for the similarity.

10. The method of claim 7, wherein the sum of the squares of the deviations is used as a value for the similarity.

11. The method of claim 1, wherein the artificial neuronal net comprises three linear layers.

12. The method of claim 11, wherein one of the three linear layers is a hidden layer containing as many neurons as are required for substantially reconstructing all variations in position and form of at least one master part.

13. The method of claim 12, wherein the weights of the net correspond in the order of the size of the eigenvalues to the eigenvectors of the covariance matrix of one of the image data and the characteristic numbers of at least one master part.

14. The method of claim 13, wherein the weights are calculated by one of forming the covariance matrix and subsequent calculation of the eigenvectors and of a suitable learning process (e.g. Hebb's learning rule).

15. The method of claim 1, wherein the recall is accomplished by one of a neurocomputer and circuit designed for the task.

16. The method of claim 1, wherein only predetermined image data and characteristic numbers from the object and master parts are utilized.

17. The method of claim 14, wherein comparative data between the input data of the artificial neuronal net and the recall data are smoothed by smoothing filters to reduce the effect of interferences in individual pixels in the images recorded by the matrix camera.